



Docket No.: IRD-0004  
(PATENT)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of:  
Hiroshi Morikawa

Application No.: 10/521,166

Confirmation No.: 5678

Filed: January 14, 2005

Art Unit: 2625

For: OUTPUT APPARATUS AND PROGRAM  
THEREOF

Examiner: B. D. Reinier

**REPLY BRIEF**

MS Appeal Brief - Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

This is a Reply Brief under 37 C.F.R. §41.41 in response to the Examiner's Answer mailed on July 21, 2009.

All arguments presented within the Appeal Brief of May 14, 2009 are incorporated herein by reference.

Additional arguments are provided hereinbelow.

Among others, the following positions were presented in the Examiner's Answer, each of which will be addressed in turn in this Reply Brief:

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**ARGUMENT****1. Withdrawn rejections**

As an initial matter, appreciation is expressed for the withdrawal of the double patenting rejection of claims 7-9 and 27 in the Final Office Action at paragraph 3.

Also, appreciation is expressed for the withdrawal of the rejection of claims 3-5, 17, 22, 25 and 26 under 35 U.S.C. §112, second paragraph, in the Final Office Action at paragraph 6.

Accordingly, at least claims 4 and 5 are deemed to contain allowable subject matter as indicated within paragraph 10 of the Final Office Action.

**2. Claims 3, 25 and 26**

Claims 25 and 26 are dependent upon claim 3. Claim 3 is drawn to an output apparatus for transforming and outputting bitmap data comprising:

a bitmap data storage unit for storing bitmap data before transformation;

a vectorization unit for producing first vector data by vectorizing at least one part of said bitmap data;

a data production unit for producing bitmap data after transformation based on an inverse function of a predetermined calculation, said bitmap data before transformation, and said first vector data; and

an output unit for outputting said bitmap data after transformation produced by said data production unit,

said data production unit comprising:

an *inverse transformation unit* for producing second coordinate information by inversely transforming first coordinate information that specifies a target dot to be processed, using said inverse function of said predetermined calculation;

*a color determination unit* for

determining a color of a position, if the first vector data is in a passing relationship with a dot represented by the second coordinate information, the color of the position specified by the second coordinate information being determined based on

the position specified by said second coordinate information,

said first vector data produced by said vectorization unit and

a color of a dot on said bitmap data, and then

setting up said color determined thereby for said target dot specified by said first coordinate information; and

a *control unit* for controlling so that said second coordinate information production by said inverse transformation unit and said dot color determination by said color determination unit can be performed on all dots on bitmap data to be outputted.

### 3. Claim 17

Claim 17 is drawn to a method for transforming and outputting bitmap data comprising the steps of:

producing first vector data by vectorizing at least one part of bitmap data before transformation that is stored;

producing bitmap data after transformation based on an inverse function of a predetermined calculation, said bitmap data before transformation, and said first vector data; and

outputting said bitmap data after transformation,

said step of producing bitmap data after transformation comprising:

*producing second coordinate information* by inversely transforming first coordinate information that specifies a target dot to be processed,

*using said inverse function* of said predetermined calculation; if the first vector data is in a passing relationship with a dot represented by the second coordinate information,

*determining a color of a position* specified by said second coordinate information based on the position specified by said second coordinate information, said first vector data and a color of a dot on said bitmap data and a color of a dot on said bitmap data, and then setting up said color determined thereby for said target dot specified by said first coordinate information;

*controlling* so that said step of producing said second coordinate information and said step of setting up said color determined thereby for said target dot

specified by said first coordinate information can be performed on all dots on bitmap data to be outputted.

**4. Claims 18 and 28**

Claim 28 is dependent upon claim 18. Claim 18 is drawn to a method for outputting comprising the steps of:

acquiring bitmap data stored;

transforming part of said bitmap data according to a transformation rule having a pair of information on certain part of said bitmap data and information indicating vector data that forms an image after transformation of said certain part,

said transforming comprising

checking whether or not the information on certain part of bitmap data obtained by the bitmap data acquisition unit matches the information on certain part of bitmap data retained by the rule retention unit; and,

if matched replacing the information on certain part of bitmap data obtained by the bitmap data acquisition unit with a pair of information indicating vector data having an image resulting from the transformation of the certain part; and

outputting data that is produced based on transformation results obtained in said data transformation step and processing results obtained in said jaggy elimination step.

## **5. Claims 22 and 26**

Claim 26 is dependent upon claim 22. Claim 22 is drawn to a computer program stored in a computer readable medium for executing processing of transforming and outputting bitmap data, comprising the steps of;

producing first vector data by vectorizing at least one part of bitmap data stored thereon;

producing bitmap data after transformation based on an inverse function of a predetermined calculation, said bitmap data, and said first vector data; and

outputting said bitmap data after transformation, said step of producing bitmap data after transformation, comprising the steps of:

producing second coordinate information by inversely transforming first coordinate information that specifies a target dot to be processed,

using said inverse function of said predetermined calculation;

determining a color of a position specified by said second coordinate information based on said first vector data and a color of a dot on said bitmap data, and then

setting up said color determined thereby for said target dot specified by said first coordinate information; and

controlling so that said step of producing said second coordinate information and said step of setting up said color determined thereby for said target dot can be performed on all dots on bitmap data to be outputted.

**6. Claims 23 and 29**

Claim 29 is dependent upon claim 23. Claim 23 is drawn to a computer program stored in a computer readable medium for executing the steps of:

acquiring bitmap data stored thereon;

transforming part of said bitmap data according to a transformation rule having a pair of information on certain part of said bitmap data and information indicating vector data that forms an image after transformation of said certain part,

said transforming comprising

checking whether or not the information on certain part of bitmap data obtained by the bitmap data acquisition unit matches the information on certain part of bitmap data retained by the rule retention unit; and,

if matched replacing the information on certain part of bitmap data obtained by the bitmap data acquisition unit with a pair of information indicating vector data having an image resulting from the transformation of the certain part; and

outputting data that is produced based on transformation results obtained in said data transformation step and processing results obtained in said jaggy elimination step.

**7. Admission on record regarding U.S. Patent No. 6,232,978 (Ishida)**

Page 4 of the Examiner's Answer readily admits that Ishida does not explicitly teach producing bitmap data after transformation based on an inverse function.

Moreover, page 4 of the Examiner's Answer readily admits that:

Ishida does not explicitly teach producing second coordinate information based on information that specifies a target dot to be processed using the inverse function of the certain calculation;

Ishida does not explicitly teach a color determination unit for determining a color of a position specified by the second coordinate information, based on the first vector data produced by the vectorization unit and a color of a dot on the bitmap data, and then setting up the color determined thereby for the target dot specified by the first coordinate information; and

Ishida does not explicitly teach a control unit for controlling so that the second coordinate information production by the inverse transformation unit and the dot color determination by the color determination unit can be performed on all dots on bitmap data to be outputted.

**8. The Examiner's Answer, throughout, attempts to associate "an intensity" of U.S. Patent No. 4,736,399 (Okazaki) with "color of the position" of the claims.**

In response, the paragraph of Okazaki beginning at column 4, line 3, is provided hereinbelow:

Following the above operation, the object is subjected to X-rays, to thereby obtain an X-ray transmission image. The X-ray transmission image contains spatial distortion that must be corrected. It is, therefore, necessary to find a pixel position vector before correction, the gradation, e.g., the intensity of the pixel, being given to a pixel address vector after correction. *To this end, by using the lattice point existing table and the lattice distortion vector table, pixel position vector X' before the correction*



*which corresponds to a pixel address vector  $X$  after the correction, is obtained, the intensity of the pixel of this pixel position vector  $X'$  would be calculated from the distorted image.*

The paragraph of Okazaki beginning at column 5, line 27, is provided hereinbelow:

Then, an intensity of the pixel at the pixel position vector  $X'$  is obtained. The pixel position vector  $X'$  does not always correspond to a pixel in the distorted image (pixel of the memory device). To cope with this, this position is resolved into an integer part ( $i, j$ ) and a decimal part ( $\alpha, \beta$ ), as shown in FIG. 7.  $x'$  and  $y'$  are given as

$$x' = i + \alpha$$

$$y' = j + \beta$$

Pixel intensities at four address points containing the pixel position vector  $X'$  are expressed by  $C(i, j)$ ,  $C(i+1, j)$ ,  $C(i, j+1)$ ,  $C(i+1, j+1)$ . By interpolating these pixel intensities through the bilinear form, the pixel intensity  $C(x', y')$  of the pixel position vector  $X'$  can be obtained and given by

$$C(\alpha, j) = C(i, j) + \alpha[C(i+1, j) - C(i, j)] \quad (6)$$

$$C(\alpha, j+1) = C(i, j+1) + \alpha[C(i+1, j+1) - C(i, j+1)] \quad (7)$$

$$C(x', y') = C(\alpha, j) + \beta[C(\alpha, j+1) - C(\alpha, j)] \quad (8)$$

Here, there is no concession as to the veracity of the claimed “color of the position” and the “intensity” of Okazaki being one in the same.

But even if the skilled artisan could have reasonably concluded the claimed “color of the position” and the “intensity” of Okazaki to be one in the same, the Examiner’s Answer fails to

disclose, teach, or suggest the intensity of the pixel of Okazaki being determined based on (*all three*):

- (i) - The position specified by said second coordinate information;
- (ii) - The first vector data produced by said vectorization unit; and
- (iii) - A color of a dot on said bitmap data.

But even if the skilled artisan could have reasonably concluded that the claimed determination of the intensity of the pixel is disclosed within Okazaki, the Examiner's Answer fails to disclose, teach, or suggest the feature of *setting up said color determined thereby for said target dot specified by said first coordinate information*.

Specifically, claim 3 includes

an inverse transformation unit for producing second coordinate information by inversely transforming first coordinate information that specifies a target dot to be processed, using said inverse function of said predetermined calculation.

In the figures, vector  $X=(x, y)$  indicates a picture element (pixel) address of the corrected image, and vector  $X'=(x', y')$  indicates a pixel position of the distorted image (Okazaki at column 3, lines 21-24).

Here, page 4 of the Examiner's Answer appears to assert vector  $X=(x, y)$  in Figure 5A of Okazaki as being the claimed target dot.

Okazaki arguably discloses that a conversion  $f$  from the image of FIG. 5A to that of FIG. 5B indicates that the image is distorted (Okazaki at column 3, lines 50-52).

Okazaki arguably discloses that the reverse conversion  $f^{-1}$  from the image of FIG. 5B to that of FIG. 6A indicates that the distorted image is corrected (Okazaki at column 3, lines 52-54).

Nevertheless, the Examiner's Answer fails to show where and how an intensity of a pixel at vector  $X=(x, y)$  in Figure 5A of Okazaki is determined.

❖ Thus, Okazaki fails to disclose, teach, or suggest the claim 3 a color determination unit for

*determining a color of a position, if the first vector data is in a passing relationship with a dot represented by the second coordinate information, the color of the position specified by the second coordinate information being determined based on*

*the position specified by said second coordinate information,*

*said first vector data produced by said vectorization unit and*

*a color of a dot on said bitmap data, and then*

*setting up said color determined thereby for said target dot specified by said first coordinate information.*

❖ Moreover, Okazaki fails to disclose, teach, or suggest the claim 17 steps of

*determining a color of a position* *specified by said second coordinate information based on the position specified by*

*said second coordinate information,*

*said first vector data and a color of a dot on said bitmap data and*

*a color of a dot on said bitmap data, and then*

*setting up said color determined thereby for said target dot specified by said first coordinate information.*

❖ *Additionally, Okazaki fails to disclose, teach, or suggest the claim 22 steps of*

*determining a color of a position specified by said second coordinate information based on said first vector data and a color of a dot on said bitmap data, and then*  
*setting up said color determined thereby for said target dot specified by said first coordinate information.*

9. The Examiner's Answer fails to identify a disclosure within either Ishida or Okazaki for the step of "checking whether or not the information on certain part of bitmap data obtained by the bitmap data acquisition unit matches the information on certain part of bitmap data retained by the rule retention unit", as is present within claims 18 and 23.

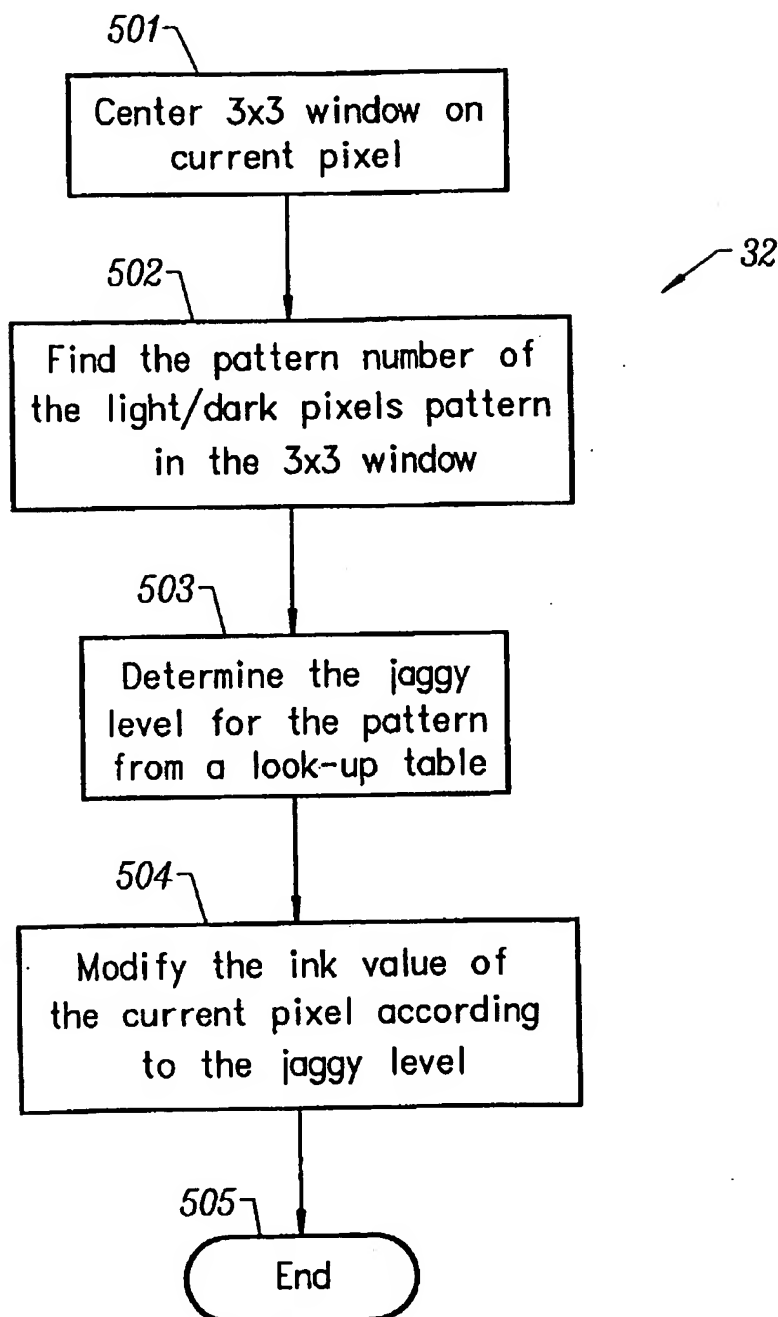
To account for this failure, the Examiner's Answer refers to U.S. Patent Application Publication No. 2003/0123094 (Karidi).

Specifically, the Examiner's Answer contends on pages 37-38 that:

To the contrary, Karidi teaches a transformation rule retention unit (look-up conversion table as shown in Table D, 503 of Figure 5, paragraph 59) that retains at least one bitmap data transformation rule (pattern that is used for smoothing is identified as shown in 502 of Figure 5) and the level of smoothing is assigned based on the rule and the particular pixel pair information (paragraphs 53-54 & 59). This level is then used by the data transformation unit (504 of Figure 5 as part of the Text Enhancement System, further disclosed in paragraph 40) when a selected grid pattern of the image matches a rule pattern (paragraph 54) and which when matched (based on transformation rules shown in Table 0) modify the ink value of the current pixel (paragraph 59). When examining Figure 5 and details of paragraphs 53-59, it is

obvious that the smoothing level assigned and the rule to be used are paired for the necessary transformation.

In response, Figure 5 of Karidi is provided hereinbelow.



Paragraph [0059] of Karidi provides the following.

[0059] FIG. 5 is a flow diagram of a second main procedure 32 that performs slanted edge smoothing, and hole mending and dot removal according to the preferred embodiment of the invention. The method centers a 3×3 window at the current pixel 501. Then the method finds the pattern number of the light and dark pixels pattern in the 3×3 window 502. The method then determines the jaggy level for the pattern from a look-up conversion table 503. The look-up conversion table's contents are jaggy levels, which herein are zero (0), one (1), two (2), and three (3). It is noted that the look-up conversion table cited herein can be created by empirical trial and error methods. The method then modifies the ink value of the current pixel according to the jaggy level 504. The method then ends 505.

Nevertheless, the Examiner's Answer fails to identify within Karidi a step of checking whether or not the information on certain part of bitmap data matches.

The Examiner's Answer refers to paragraph [0054] of Karidi (Examiner's Answer at pages 37-38).

Paragraph [0054] of Karidi provides the following.

[0054] The distinct ink and background patterns in the preferred embodiment and their corresponding smoothing levels, herein also referred to as jaggy levels, are given in Table D herein below. Patterns that are related to one another through a rotation or a reflection are assigned the same smoothing level. Only one of them is listed herein below in Table D. Furthermore, this list in Table D only shows those cases wherein the center pixel is an ink pixel. The smoothing level of the center pixel when it is a background pixel can be deduced from the binary complement of the list given in Table D.

Table D of Karidi provides the following.

TABLE D											
(0 = background, 1 = ink)											
<u>Level 0</u>											
111	111	111	111	111	111	111	111	110	111	111	111
111	011	111	011	011	011	010	111	111	011	010	011
111	111	011	011	101	110	111	010	011	100	110	010
110	011	111	110	110	110	111	110	110	101	011	010
011	011	010	011	011	111	010	010	011	011	011	011
011	011	101	101	110	010	100	110	100	100	100	110
011	111	011	110	010	000	000	001	000	001	001	001
010	010	011	011	111	110	111	110	111	110	110	010
110	010	010	001	010	011	001	100	010	010	001	101
000	000	000	001								
110	110	111	010								
010	001	000	100								
<u>Level 1</u>											
111	111	101	000	000	000	000					
011	011	010	110	110	010	110					
001	000	101	110	101	100	100					
<u>Level 2</u>											
100	000	000									
110	110	010									
100	000	101									
<u>Level 3</u>											
000											
010											
000											

However, Paragraph [0054] and Table D of Karidi fail to identify within Karidi a step of checking whether or not the information on certain part of bitmap data matches.

❖ Thus, Karidi fails to disclose, teach, or suggest the claim 18 method that has said transforming comprising

*checking whether or not the information on certain part of bitmap data obtained by the bitmap data acquisition unit matches the information on certain part of bitmap data retained by the rule retention unit; and,*

*if matched replacing the information on certain part of bitmap data obtained by the bitmap data acquisition unit with a pair of information indicating vector data having an image resulting from the transformation of the certain part.*

❖ *Likewise, Karidi fails to disclose, teach, or suggest the claim 23 computer program that has said transforming comprising*

*checking whether or not the information on certain part of bitmap data obtained by the bitmap data acquisition unit matches the information on certain part of bitmap data retained by the rule retention unit; and,*

*if matched replacing the information on certain part of bitmap data obtained by the bitmap data acquisition unit with a pair of information indicating vector data having an image resulting from the transformation of the certain part.*

### **CONCLUSION**

The prior art of record fails to disclose, teach or suggest all the features of the claimed invention. For the foregoing reasons, all the claims now pending in the present application are allowable, and the present application is in condition for allowance.

For at least the reasons set forth hereinabove, the rejection of the claimed invention should not be sustained. Therefore, a reversal of the rejection is respectfully requested.

If any additional fee is required or any overpayment made, the Commissioner is hereby authorized to charge the fee or credit the overpayment to Deposit Account # 18-0013.

Dated: September 15, 2009

Respectfully submitted

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